



# NoFoam System for Aircraft Rescue and Fire Fighting (ARFF) Vehicle

Technology for Elimination of Aqueous Film Forming Foam (AFFF) Wastewater

## Background

Aircraft Rescue and Firefighting (ARFF) vehicles are required to go through periodic aqueous film-forming foam (AFFF) nozzle discharge tests to ensure proper functioning of its foam delivery system. Traditionally, these tests involved discharge of AFFF. However, despite its effectiveness and widespread use for extinguishing fires, AFFF waste poses an environmental concern because of its high biological oxygen demand, chemical oxygen demand, and extreme foaming action. Further, its main constituent is now being investigated by the United States Environmental Protection Agency for its chemical persistence, bioaccumulating tendency, and toxicity.

While the NoFoam system cannot displace the use of AFFF in actual fire-fighting missions, it is capable of performing ARFF vehicle discharge checks without generating AFFF waste that requires special handling and disposal.

## Technology

The NoFoam Unit was developed by the NAVFAC Engineering and Expeditionary Warfare Center (NAVFAC EXWC) under the sponsorship of the Environmental Security Technology Certification Program (ESTCP) and the Environmental Protection Safety and Occupational Health Division of the Chief of Naval Operations.

For each discharge test, the fire fighter drives the ARFF vehicle to the NoFoam trailer and connects to the surrogate test fluid. The system is battery-powered and rechargeable by a solar panel. By turning a valve, the vehicle AFFF concentrate fluid is isolated during the discharge test. From here, the firefighter continues on with the discharge procedures. For maintenance verification, the flow rate of the surrogate fluid is recorded as the measure of the foam distribution system's performance. This number is accepted as the representative figure for the flow rate of AFFF concentrate being delivered into the vehicle's foam distribution system, and can be read off of the monitor connected to a meter installed in the system.

In addition to the formal discharge check with flow rate reading, the NoFoam System offers firefighters an option to use dye-water solution for secondary visual checks on the vehicle performance. The dye used for this purpose is environmentally benign, biodegradable, and certified by the National Sanitation Foundation International and the American National Standard Institute. Both are industry standards adopted by the Department of Defense.



## Benefits

- Test the on-board foam distribution system on ARFF vehicles without releasing AFFF wastewater into the environment
- Validate the functionality of on-board foam distribution system
- Give firefighters the option to conduct secondary discharge tests using dye water and increase mission readiness
- Reduce AFFF concentrate procurement cost
- Assist facilities to comply with relevant Federal pollution and waste minimization regulations
- Adaptable to any model of ARFF vehicle
- Require minimal user training for operation and maintenance



## Costs

- NoFoam System Trailer = \$19K
- Depending on the model of ARFF vehicle, retrofit module = \$1K - \$2K per vehicle
- Travel, installation, testing and user training = \$10K, based on retrofitting three P19 ARFF vehicles at one location

## Availability

- NoFoam System technology may be acquired by contacting the NAVFAC EXWC

## Points of Contact

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